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Letter to the Editor

Mosaicism Most Likely Accounts for Extended Survival of Trisomy 22

To the Editor:

Recently, Bacino et al. [1995] reported molecular marker results in a case of non-mosaic trisomy 22 which survived to term [Bacino et al., 1995]. Although the authors interpreted the results to be consistent with a meiosis II nondisjunction, reduction to homozygosity of maternal alleles was observed for each of 4 informative loci (D22S301, D22S311, D22S299, D22S55) which span most of 22q. Such a result is considered to be indicative of a somatic rather than a meiotic origin (of any stage) of the extra chromosome [Antonarakis et al., 1993; Robinson et al., 1993]. In contrast, a molecular study on the origin of trisomy 22 from spontaneous abortions concluded that all of 19 informative cases were consistent with either a meiosis I or II error on the basis of parent-of-origin heterozygosity at one or more loci [Zaragoza et al., 1994]. The interpretation of a somatic rather than meiotic origin of the trisomy in this case therefore has important implications in terms of explaining the extended survival, as the presence of undetected mosaicism confined to at least some tissues is very likely. Although full trisomy was observed in both blood and skin, placental tissues were not sampled and mosaicism in the placenta cannot be excluded as contributing to the prolonged survival.

A second case reported by Bacino et al., for which pregnancy was terminated at 31 weeks, was not studied molecularly but showed full trisomy 22 in multiple tissues including chorion and cultured chorionic villi cells (villous stroma). Thus, the authors excluded placental mosaicism as an explanation for the extended survival in this case. However, it is important to emphasize that previous studies on trisomy 13 and trisomy 18 showed that extended survival was specifically associated with disomy 13 and 18 mosaicism confined to the cytotrophoblast, whereas non-mosaic trisomy was observed in fetal tissues, villous stroma, chorion, and amnion [Kalousek et al., 1989]. Complete placental studies, including cytotrophoblast, are therefore essential before mosaicism in the placenta can be excluded as an explanation for prolonged survival in these and similar cases.

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